

Reply Under 37 CFR 1.116—Expedited Procedure
Technology Center 1634

Atty. Dkt. No. 074022-3303

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-50 (Cancelled)

51. (Presently amended) A support comprising a surface on which an assay for an analyte of interest can be performed, comprising:

an attachment layer comprising diamond-like carbon on the support surface, wherein the attachment layer is adapted for capture of the analyte of interest for detection in the assay by binding the analyte directly to the diamond-like carbon; and

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, positioned on said support.

52. (Previously presented) A support according to claim 51, wherein the attachment layer comprises a layer of diamond-like carbon of between about 50 Å to about 3000 Å in thickness.

53. (Previously presented) A support according to claim 51, wherein the degree of hydrophobicity of the attachment layer results from a preselected sp^2 and sp^3 character of the diamond-like carbon.

54. (Previously presented) A support according to claim 51, wherein the diamond-like carbon is configured to function as an antireflective layer.

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55. (Presently amended) A support according to claim 51, wherein the support further comprises an optically functional layer is interposed between the support surface and the attachment layer.

56. (Previously presented) A support according to claim 51, wherein the support provides a change in optical thickness upon binding of the analyte capable of attenuating one or more wavelengths of light.

57. (Previously amended) A support according to claim 51, wherein the support provides laminar flow through or across the support.

58. (Previously presented) A support according to claim 51, wherein the attachment layer comprises diamond-like carbon in a form selected from the group consisting of synthetic diamond, natural diamond, industrial diamond, monocrystalline diamond, resin-type diamond, polycrystalline diamond, amorphous carbon with diamond-like hardness and surface energy properties, amorphous hydrogenated diamond-like carbon, and non-crystalline to crystalline carbon films with diamond-like hardness and surface energy properties.

59. (Previously presented) A support according to claim 51, wherein the diamond-like carbon comprises non-carbon material.

60. (Previously presented) A support according to claim 59, selected from the group consisting of hydrogen, silicon, and nitrogen.

61. (Previously presented) A support according to claim 51, wherein the support comprises a material that is not compatible with high temperatures.

62. (Previously presented) A support according to claim 61, wherein said high temperature is greater than 100°C.

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63. (Previously presented) A support according to claim 61, wherein the material that is not compatible with high temperatures is selected from the group consisting of cellulose acetate, polyethylene terephthalate (PETE), polyester, polycarbonate, nylon, filter paper, polysulfones, polypropylene, and polyurethane.

64. (Previously presented) A support according to claim 61, wherein the diamond like carbon has a hardness of about 15 to about 50 Gpa.

65. (Previously presented) A support according to claim 61, wherein the attachment layer has a refractive index of about 1.5 to about 2.2.

66. (Previously presented) A support according to claim 51, wherein said support is a biosensor.

67. (Previously presented) A support comprising a surface on which an assay for an analyte of interest can be performed, comprising:

an attachment layer comprising a layer of diamond-like carbon of between about 50 Å to about 500 Å in thickness on the support surface, wherein said attachment layer comprises a capture molecule bound to said diamond-like carbon for specific capture of said analyte by binding said analyte to said capture molecule.

68. (Previously presented) A support according to claim 67, wherein said capture molecule is selected from the group consisting of an antigen, an antibody, a receptor, a nucleic acid, an RNA, a DNA, a polysaccharide, a lipopolysaccharide, an enzyme, a protein, a microorganism, a hapten, a drug, a ligand, and a chelator.

69. (Previously presented) A support according to claim 67, wherein a degree of hydrophobicity of the attachment layer results from a preselected sp^2 and sp^3 character of the diamond-like carbon.

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70. (Previously presented) A support according to claim 67, wherein said diamond-like carbon is an antireflective layer.

71. (Previously presented) A support according to claim 67, wherein said support further comprises an optically functional layer interposed between said surface and said attachment layer.

72. (Previously presented) A support according to claim 67, wherein said support provides a change in optical thickness upon binding of said analyte capable of attenuating one or more wavelengths of light.

73. (Previously presented) A support according to claim 67, wherein said support provides laminar flow through or across said support.

74. (Previously presented) A support according to claim 67, wherein said attachment layer comprises diamond-like carbon in a form selected from the group consisting of synthetic diamond, natural diamond, industrial diamond, monocrystalline diamond, resin-type diamond, polycrystalline diamond, amorphous carbon with diamond-like hardness and surface energy properties, amorphous hydrogenated diamond-like carbon, and non-crystalline to crystalline carbon films with diamond-like hardness and surface energy properties.

75. (Previously presented) A support according to claim 67, wherein the diamond-like carbon comprises non-carbon material.

76. (Previously presented) A support according to claim 75, wherein the non-carbon material is selected from the group consisting of hydrogen, silicon, and nitrogen.

77. (Previously presented) A support according to claim 67, wherein the support comprises a material that is not compatible with high temperatures.

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78. (Previously presented) A support according to claim 77, wherein said high temperature is greater than 100°C.

79. (Previously presented) A support according to claim 77, wherein the material that is not compatible with high temperatures is selected from the group consisting of cellulose acetate, polyethylene terephthalate (PETE), polyester, polycarbonate, nylon, filter paper, polysulfones, polypropylene, and polyurethane.

80. (Previously presented) A support according to claim 77, wherein the diamond like carbon has a hardness of about 15 to about 50 Gpa.

81. (Previously presented) A support according to claim 77, wherein the attachment layer has a refractive index of about 1.5 to about 2.2.

82. (Previously presented) A support according to claim 67, wherein said support is a biosensor.

83-91. (Cancelled)